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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WEIDNER, TIMOTHY J	
ART UNIT	PAPER NUMBER
2619	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/495,207	ROBOTHAM, ROBERT E.	
	Examiner	Art Unit	
	Timothy J. Weidner	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date. *2/21/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 21, 2008 has been entered.

Response to Amendment

2. Claims 9, 17, and 24 are currently amended.

3. Claims 34-37 are new.

Response to Arguments

4. Applicant's arguments with respect to claims 1-33 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 8, 10, 17, and 24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,510,158 B1 in view of Sorinsuo et al (US 6,148,001) and Shimojo (US6,934,296).

7. Regarding claims 1, 10, and 17, changes from the patented claim 1 include:

8. (a) “virtual circuit” in the patent claim is “virtual connection” in the current claims,

9. (b) “obtaining logical buffer dequeuing information for the combined virtual circuit" in the patent claim is "queuing the identity of a virtual connection in a queue … generating a data stream for the merged virtual connection based on ... identities stores in the queue" in the current claims, and

10. (c) “generating the virtual circuit merge” in the patent claim is "each unit of data in the data stream includes the merged identifier" in the current claims.

11. With respect to (a) the difference would have been obvious in view of Sorinsuo, which teaches virtual circuits and virtual connections used in an ATM network for the purpose of scheduling packets for incoming VCCs for transmission on the order they have all cells for a packet available (column 3, lines 44-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the patent claim to include a virtual connection end of message indicating a complete packet to

schedule packets for incoming VCCs for transmission on the order they have all cells for a packet available.

12. With respect to (b), both limitations are closely related because both limitations refer to the same thing, i.e. a reference pointer for dequeuing data from a buffer. Shimojo, which is in the same field of endeavor, teaches queueing a VCI for use in a buffer pointer management unit that associates the VCI with various connection parameters, and for outputting the data accordingly (columns 17 and 18, lines 19-31 and 49-57 respectively). It would have been obvious to one of ordinary skill in the art at the time the invention was made to queue the identity for when data that constitute a complete packet is buffered to associate the VCI with various connection parameters, and to output the data accordingly.

13. With respect to (c), the difference would have been obvious in view of Sorinsuo which teaches a merged transmission is done using a single VCC, i.e. merged identifier (column 9, lines 39-43), and where each unit of data in the transmission includes the merged identifier (figure 9, item 960, X) for the purpose saving on the number of VCCs used. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have each unit of data include the merged identifier to save on the number of VCCs used.

14. Regarding claims 8 and 24, changes from the patented claim 1 include “generating … the virtual circuit merge based on an end of message detection" in the patent claim is "detecting an end of message indication that indicates a final unit of data for the complete packet" in the current claims. The difference is obvious in view of

Sorinsuo, which teaches virtual circuits and virtual connections used in an ATM network for the purpose of routing cells through the network (column 2, lines 33-41 and 53-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the patent claim to include a virtual connection end of message indicating a complete packet to route cells through an ATM network.

Claim Rejections - 35 USC § 112

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Claims 1, 17, 25, and 35-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

17. Claims 1, 17, and 25 recite the limitation "queuing the identity" in lines 6, 9, and 6 respectively. There is insufficient antecedent basis for this limitation in the claims. This limitation appears to rely on “each of the plurality of virtual connections is identified by an identifier" in lines 4-5, 7-8, and 4-5 respectively, but there may be a difference between "identifier" and “identity".

18. Claims 35 and 36 recite the limitation "the dequeuing" in lines 1 and 1 respectively. There is insufficient antecedent basis for this limitation in the claims.

19. Claim 37 recites the limitation “each interval” in line 4. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 103

20. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

21. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorinsuo et al. (US 6,148,001) in view of Shimojo (US 6,934,296 B2).

22. Regarding claims 1, 10, 17, and 25, Sorinsuo teaches cells are received for buffering from multiple incoming virtual channel connections (VCC) (column 9, lines 52-59), where each of the VCCs is identified by a virtual connection identifier (VCI) (column 9, lines 2-4). Further, the state is maintained for each incoming VCC, which indicates whether the buffer of that VCC contains one or more complete packets (column 9, lines 14-16), where there may be one or more buffers (column 4, lines 1-2), but may not explicitly teach queuing the identity.

23. Shimojo, which is in the same field of endeavor, teaches queuing a VCI for use in a buffer pointer management unit that associates the VCI with various connection parameters, and for outputting the data accordingly (columns 17 and 18, lines 19-31 and 49-57 respectively). It would have been obvious to one of ordinary skill in the art at the time the invention was made to queue the identity for when data that constitute a complete packet is buffered to associate the VCI with various connection parameters, and to output the data accordingly.

24. Sorinsuo further teaches various priority options including the treatment of OAM cells (columns 9-10, lines 64-4), i.e. obtaining prioritization information. Packets are transmitted in the order that complete packets are received including when OAM cells

are buffered as ordinary cells, i.e. based on the prioritization information and queued identities described above (column 9, lines 57-64), where the transmission is done using a single VCC, i.e. merged identifier (column 9, lines 39-43), and where each unit of data in the transmission includes the merged identifier (figure 9, item 960, X).

25. Further, regarding claim 25, Sorinsuo teaches scheduling can support priorities (column 10, lines 30-31) and classes (column 7, lines 42-50), but may not explicitly teach dequeuing of data is performed in intervals, where different classes receive priority for different ones of intervals. Shimojo teaches dequeuing of data is performed in intervals (column 25, lines 3-8), where different classes receive priority for different ones of the intervals (column 24, lines 39-46) for the purpose of avoiding underflow (column 24, lines 48-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to dequeue data in intervals, where different classes receive priority for different ones of intervals to avoid underflow.

26. Regarding claims 2, 18, and 26, Sorinsuo teaches various priority options including the treatment of OAM cells (columns 9-10, lines 64-4), i.e. obtaining prioritization information. Packets are transmitted in the order that complete packets are received including when OAM cells are buffered as ordinary cells, i.e. based on the prioritization information (column 9, lines 57-64).

27. Regarding claims 3, 11, 19, and 27, Sorinsuo teaches scheduling can support priorities (column 10, lines 30-31) and classes (column 7, lines 42-50), but may not explicitly teach the queue includes a plurality of queues corresponding to a plurality of

classes, wherein queueing the identity includes doing so into one of the queues based on class.

28. Shimojo teaches the queues includes a plurality of queues corresponding to classes (column 24, lines 39-46), and likewise teaches the flows may include VCCs and different classes (column 20, lines 1-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to queue the identity into one of a plurality of queues based on class to associate the VCI with various connection parameters, and to output the data accordingly.

29. Regarding claims 4, 12, 20, and 28, Sorinsuo teaches scheduling includes going through a buffer state list (column 10, lines 22-24), but may not explicitly teach each of the plurality of queues is a linked list.

30. Shimojo teaches each of the queues is implemented using a chain of buffer pointers (column 18, lines 37-38), i.e. linked list, wherein queuing the identity includes appending the identity to a tail of one of the linked lists (columns 18 and 19, lines 56-57 and 1-2) where the queues are based on class (column 24, lines 39-46) for the purpose of an easily searchable structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have each of the plurality of queues as a linked list, and append the identity to a tail of one of the lists based on class to have an easily searchable structure.

31. Regarding claims 5, 13, 21, and 29, Sorinsuo teaches the prioritization information may include class (column 7, lines 42-50), and further outputs the packets

on a single VCC (column 8, lines 25-35), i.e. allocates bandwidth on the merged virtual connection based on class.

32. Regarding claims 6, 22 and 30, Soirinsuo teaches prioritization information further comprises referencing a prioritization table (e.g., scheduler supporting priorities, see col. 10, lines 22-42) that stores an accessing sequence (e.g., buffer state list or weighted scheduling) for the plurality of queues.

33. Regarding claims 7, 23 and 31, Soirinsuo teaches generating the cell stream such that cells corresponding to different packets that are combined to produce the merged virtual connection are not intermingled (e.g., see col. 10, lines 29-35).

34. Regarding claims 8, 24 and 32, Soirinsuo teaches detecting an end of message indication that indicated a final cell for the complete packet (e.g., see col. 9, lines 7-8).

35. Regarding claims 9 and 33, Sorinsuo teaches merging multiple incoming VCCs into a single outgoing VCC, and upon completion of transmission of a packet from one incoming VCC, transmits a packet from another incoming VCC (column 9, lines 39-51), i.e. combines the data stream for the merged connection with an additional virtual connection, where the incoming VCCs are identified differently than the outgoing VCC (figure 9, item 934, VCCin/VCCout).

36. Regarding claim 14, Sorinsuo teaches scheduling can support priorities (column 10, lines 30-31) and classes (column 7, lines 42-50), but may not explicitly teach the prioritization information causes transitions between classes for dequeuing based on a number of packets for a particular class.

37. Shimojo teaches dequeuing of data is performed in intervals (column 25, lines 3-8), where different classes receive priority for different ones of the intervals (column 24, lines 39-46) based on the number of packets for a particular class (column 24, lines 65-67) for the purpose of avoiding underflow (column 24, lines 48-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the prioritization information cause transitions between classes for dequeuing based on the number of packets for a particular class to avoid underflow.

38. Regarding claims 15 and 16, Sorinsuo teaches the virtual connection merging system is included in a switch controller (figure 11, item 1120; column 10, lines 13-15) which is connected to the line interface having input/output ports (column 10, lines 8-10), i.e. in the ingress/egress portion of a switch. Further, Sorinsuo teaches that it may be part of a chip on the output data path (column 10, lines 35-38), i.e. egress portion.

39. Regarding claim 34, Shimojo inherently teaches limiting the number of times the identity of the virtual connection may be stored in the queue because a queue always has a limited size, thereby limiting the amount of information that can be stored.

40. Regarding claim 35, Sorinsuo teaches scheduling can support priorities (column 10, lines 30-31) and classes (column 7, lines 42-50), but may not explicitly teach reverting to a highest priority.

41. Shimojo teaches dequeueing with priority control among classes by issuing transfer commands in intervals (column 25, lines 3-8) where part of the background is referred to (column 24, lines 39-49). The background referred to teaches issuing a transfer command to a class-1 queue when the number of cells Na in the class-2 queue

is zero (column 6, lines 1-4), i.e. the class-1 queue is a highest priority class when class-2 is empty, for the purpose of avoiding a vain-command. It would have been obvious to one of ordinary skill in the art to revert the priority for the particular interval to a highest priority class to avoid a vain-command.

42. Regarding claim 36, Sorinsuo teaches the scheduler goes through a buffer state list (column 10, lines 22-24), but may not explicitly teach incrementing a pointer within a prioritization information table when a first class does not have data to transmit during a particular interval.

43. Shimojo teaches a number of flows relating to a number of classes (column 20, lines 1-9). When the stored amount of data for a particular flow is zero, determined by referencing a flow table (column 21, lines 62-67), i.e. class prioritization information table, a pointer within the table is changed (column 22, lines 20-30) for the purpose of determining a packet group to which a newly input cell should be entered. It would have been obvious to one of ordinary skill in the art at the time the invention was made to increment a pointer within a prioritization information table to determine a packet group to which a newly input cell should be entered.

44. Regarding claim 37, Sorinsuo teaches scheduling can support priorities (column 10, lines 30-31) and classes (column 7, lines 42-50), but may not explicitly teach transmitting a number of packets during each interval, including a predetermined number of packets corresponding to a particular class.

45. Shimojo teaches transmitting a predetermined number of packets Ma2 during an interval (column 25, lines 3-8) corresponding to a particular class (column 24, lines 39-

46) for the purpose of avoiding underflow (column 24, lines 48-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit a predetermined number of packets during each interval to avoid underflow.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Weidner whose telephone number is (571) 270-1825. The examiner can normally be reached on Monday - Friday, 8:00 AM - 5:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Timothy J Weidner/

Examiner, Art Unit 2619

/CHAU T. NGUYEN/
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